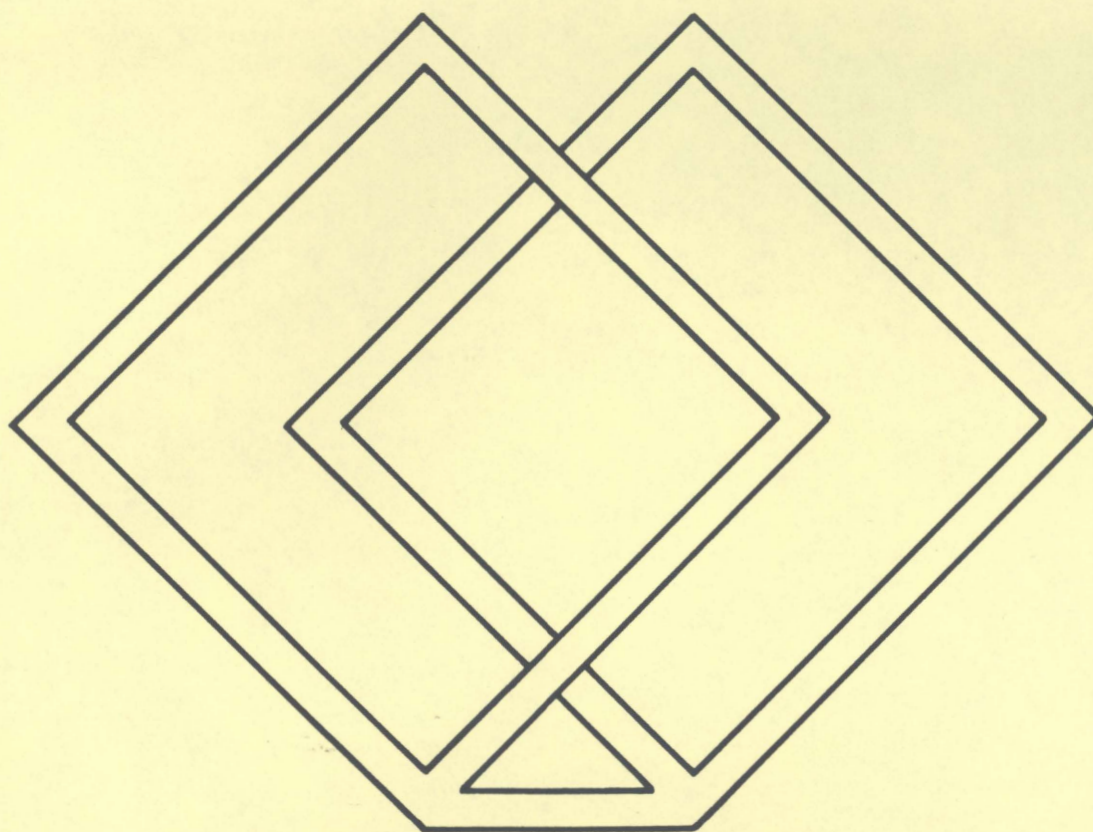


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§ Note: These thoughts were received by myself in correspondence several weeks ago. I believe the comments are worth sharing with you, the wider audience, for several reasons. The author is a scientist; the points well taken. Further, members of ACUFOS are rarely treated to non-English speaking points of view on the UFO problem; even more so the case from countries behind what we in the West call the "Iron Curtain".

John Prytz.

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EDITORIAL

by Frank Gillespie

WHITHER ACUFOS

As I write this column, the Australian Centre for UFO Studies stands at the crossroads. Two of the three ACUFOS Coordinators are calling it a day, and our thanks go to Bill Chalker and Vladimir Godic for the service and sacrifice they have contributed over the last 21 months. New Coordinators will probably be appointed at Australian UFO Conference No. 8; and on their talents and initiative will depend the future thrust and direction of ACUFOS.

Theoretically, an organisation such as ACUFOS should not be materially affected by the personalities concerned in its operation. In reality, every individual who becomes more than marginally involved, has the potential to leave a more or less permanent impression on the organisation. With the study and promotion of ufology as a common cause, these personal effects should not extend to matters of importance; because every individual should realise that he can never achieve alone what he could do as part of a team.

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Supposedly, according to author Douglas Adams, the Ultimate Answer to "life, the universe and everything" is "42". Although "everything" of course includes the UFO, whether or not that answer, "42", explains in part or in whole the UFO problem, far less anything or everything else, remains to be resolved to the satisfaction of others. As for me, I'm not holding my breath or placing any bets! However, it has triggered off the following thought waves - now placed before you.

Although I have no real idea what the Ultimate Answer to "life, the universe and everything" is, I am convinced the Ultimate Question contains the conceptual elements of evolution, intelligence, and destiny. A cosmic subequation on the road to "42" (or whatever it really is) that is fundamental to "life, the universe and everything" is that cosmic change over cosmic time (evolution) is directly related to the degree to which the cosmos understands itself (intelligence) which both have relationships with the relative degree of cosmic entropy (destiny) within the cosmos. Whew! I'll try to explain, and in so doing, expand upon a theme that I've only briefly sketched out before.

In the great cosmic classification and hierarchical scheme of things, we have found it useful to make distinctions between the animate (living) and the inanimate (non-living). The animate is frequently divided into the flora (plants) and the fauna (animals). Taken together, these produce the common expression "animal, vegetable or mineral". (Of course it's not quite that clear-cut. Is a virus animate 100% of the time? Is the flagellate Euglena a plant, animal or both? Having pointed out such hairsplits - for the record - I'll also note that such fine distinctions have little if any applicability to the nature of the discussion which follows. In fact, such examples serve as linchpins between the artificial divisions we impose on the cosmos, and illustrate that in reality the universe and everything in it is related in one great continuum.)

In considering the category "animals", we frequently pigeon-hole them as being "higher" or "lower" - in thought and in deed. To a large extent, we subconsciously relate to our fellow animals not in terms of their size or colour or appearance, but in terms of their "intelligence" (real or imagined). Lower animals, commercial animals, sporting animals, etc. have little intelligence. Higher animals, including pets and animals that exhibit quasi-human behavioural traits have some degree of intelligence. We of course have a lot!

We note that a spectrum is emerging. The way we relate to and treat a rock is quite different from that of a plant, which in turn is different by a considerable margin from that of a lower animal, which differs yet again from a higher animal, which starts to approximate our relationships with, and treatment of, fellow human beings, whom we place at the pinnacle.

If we stop and think about it, another spectrum emerges. We have a progression of boxes within boxes. The biggest box is of course the cosmos - all that is or was or ever will be. Within the ultimate box we have the box of "processes" - natural laws if you wish - and matter/energy. A sub-box of matter/energy is animate matter and energy. Animals are a sub-box of things that are animate; humans are a sub-box of the division "animals" (whether we like it or not!).

Now we can ask how do these various boxes or elements relate to their environment (where environment is really a synonym for the ultimate box, thus far termed the universe or cosmos)? What options do the things in the various boxes have in coming to grips with the sets of conditions the environment gives them?

The options one has seem to be a function of two things. First and foremost is the box of "processes"

or natural laws - the ultimate set of rules and regulations that govern the environment. The other factor is your knowledge and understanding of the environment, including the box of processes.

Although there are, or appear to be, ultimate natural laws that cannot be broken, hence they are limiting factors for which there is no higher authority, or box, that one can appeal to, nevertheless there is often lots of freedom in which to operate within those ultimate boundaries. You may not be allowed to throw a ball faster than the speed of light, but that still allows for a wide range of sanctioned velocities. But I'm getting ahead of myself.

If you have no information about your environment and its processes, then clearly you are going to be 100% at the mercy of those rules and that environment. In other words, you have no options. That fits the box of things we call inanimate objects, be they macro or micro. Inanimate objects are therefore "easy" (in a relative sense) to understand. If you understand the processes, you of necessity understand (hence can predict) the behaviour of inanimate matter. There is a one-to-one correlation. But after that, things get more and more complicated.

Animate objects have information about their environment and processes, whether conscious, subconscious or unconscious, to a greater or lesser extent, in one of two locations or both together in differing relationships. Which of those locations contain the most information - hence which dominates - is my next theme.

Animate objects, because they possess information about their environment and the processes operating in that environment, have options in coming to terms with that environment. Thus, animate objects are not as understandable, hence predictable, as any inanimate object. Some animate objects, such as plants, are quite reasonably understandable and predictable - although I'm sure there are farmers and gardeners who would pick that particular bone with me. But if they do, it is because I err on the side of understating the facts, not overstating them.

At the other extreme there is the human being. Enough said. We're the most unpredictable animate object there is (unless one starts to ponder the enigma of the UFO - as I shall eventually; to do so now would be to get ahead of myself again). Why? Because we possess the (known) pinnacle of knowledge and understanding yet achieved about the cosmos and its processes.

Between the two animate extremes lie the smooth graduations through the lower and higher animals.

Now, what are the containers that contain an animate object's knowledge and understanding of the processes and environment it must survive in? One source is the biochemical messages that are encapsulated in the structures we term the genes. This information or knowledge is passed on - not learned - automatically from generation to generation. We call gene behaviour "instinct", and such behaviour is clearly of a different nature and distinguishable from the natural behaviour as shown by inanimate objects. An insect crawls under a rock to avoid the hot summer sun. The rock sits there and cops it! (The human being may or may not sit there and cop it - it depends. Interesting differences are coming to the fore.)

All animate objects have "environment instinct information" in their genes, so that alone cannot account for the vast difference between the behaviour of plants or insects and human beings. But there is that second location of knowledge and understanding alluded to above. It rounds out the picture. This second site of information storage is a non-instinctive one. Animate

objects, to a greater or lesser extent, can gather in and assimilate in a continuing real-time fashion, through the senses, additional environmental information not of their lump-sum gene package deal at the time of their conception. This experienced and learned information is also stored bichemically, but in that second location which for all practical purposes we address as being the "brain". Behaviour that originates from sensory, not genetic, sources we term "intelligent behaviour", although both instinctive and intelligent behaviour are brought into play under most circumstances. In the lower animals it is mainly instinct which dominates. In human beings, it's often a toss-up. It depends on the specifics involved. The ratio of the absolute ability to override instinctive behaviour with intelligent behaviour, in any organism, we can term as a measure of that organism's "free-will". Clearly human beings have more "free will" than pussy cats, who in turn exhibit more environmental independence than starfish, who in turn have more to say over their fate than a tree. Even trees have infinitely more "free will" than a stone!

And so we arrive at two important findings. The first is that there is an inverse relationship between the "free will" an organism has and how predictable that organism's behaviour is. The second is that at some point on the evolutionary road from the inanimate to the animate, from plant to man, the information content of the gene was exceeded by the information content of the brain - otherwise intelligence could not override instinct. At that particular junction the cosmos began to lose control over its own destiny. Intelligence is a force which can remove the rock baking in the sun; cause that same rock to crush the life out of the insect it was heretofore giving shelter to; and which decides that a suntan is worth a day or two of initial sunburn! And lest anyone doubt that there has been a very fundamental alteration in the cosmic order of things because of the relativities of abilities caused by a shift of genetic knowledge to sensory knowledge, just consider that increasingly it is more and more obvious that intelligence directs the course of its own evolution and destiny. The ultimate process box allows that option. But just try to predict what that evolution and destiny will be at any given point in the future! But that's another essay entirely, and pursuit now is getting off the track. For the moment, I want to concentrate on the first point.

Over time, from the birth of the cosmos through the present, there has been a spectrum of evolution. The universe has gone from being 100% inanimate, to something less than that. The cosmos has evolved from a state of no options to one of numerous options. There has been a progression from obedient behaviour through instinctive behaviour through intelligent behaviour. Phrased another way, one can say that through a process of change over time, the universe has evolved from a state of high predictability (so much so that cosmologists and physicists can state with confidence the state of the cosmos only micro-milliseconds after its "Big Bang" birth) to one of lower certainty (because of the evolution of life, hence intelligence). Just how much less is impossible to quantify - but it's the principle, not the relative degree, that's important. Also important is that there is no reason to believe that these trends in cosmic evolution will slow down, stop, or reverse. There is every degree of confidence in placing forth the belief that the future will be more animate, be more intelligent, have more options, and be more unpredictable than it is in the here and now.

That's of course the terrestrial future and terrestrial impact. What of other cosmic animate objects - extraterrestrials? What of their impact? Their options? Their intelligence? Their predictability? And what if the projected state of our terrestrial future should be the equal to an extraterrestrial's here and now? When one expands the horizon to encompass the extraterrestrial, while maintaining the above broad cosmic spectrum made obvious from analysis of this terrestrial abode,

interesting conclusions can be entered into for the cost of a few microwatts of brainwave electrical energy expenditure.

Having established the above, the mention of "extraterrestrials" is obviously my suggestive lead into talking about the UFO connection.

Looking at the terrestrial spectrum as being representative of all of cosmic evolution, an assumption of mediocrity, where does the UFO place? It's as much a part of "42" as we are, hence must be placed somewhere in the cosmic spectrum. But can it be placed within the terrestrial subpart of the cosmic spectrum? At first glance it would seem logical, after all the UFO operates within the terrestrial environment. But...

Is the UFO's behaviour as predictable as that of an inanimate object's, obedient only to the inflexible processes of nature with no options available for altering its fate? Or, is the behaviour of the UFO more akin to that of an instinctive animate object? Is the behaviour of the UFO, its degree of predictability, in the same ballpark as that to which we relate intelligence? Perhaps the UFO is so unpredictable that it falls out of the terrestrial spectrum entirely; so unpredictable that the UFO could be a reflection of ultra-intelligence - intelligence beyond the human.

The difference between exactly predicting a natural event involving only inanimate objects, and statistically predicting such an event, is proportional to our understanding of the cause and effect relations central and peripheral to the event in question. If we had absolute knowledge of all the universe's box of processes, and we confined this thought experiment to a totally inanimate universe, then the absolute future destiny of the universe would be knowable in advance with certainty, as would the future and fate of every single inanimate object within it - the Heisenberg Uncertainty Principle notwithstanding. I have a philosophical objection to uncertainty. My personal bottom line is that ultimately there are absolutes - such as the speed of light - and the discovery of them makes the universe absolutely knowable. But I digress.

Research turns statistics into certainties - certainty also being a statistical measurement with a probability value of 100% - given enough time and effort. Providing of course we restrict ourselves to inanimate things.

But it seems that no amount of ufological research and expenditure of time and effort over the past (nearly) four decades has made the slightest dent in the art (far less science) of UFO behaviour prediction! UFOs appear to treat us like we treat rocks. To a rock, the human being, and its relationship with rocks, must be totally unpredictable.

It's as near to impossible as makes no odds to predict where, when, or even the type of the very next UFO incident. Not even to any great extent can we even loosely statistically do this. It is proving to be an exasperating exercise to try and devise a natural law or process that will assist us in coming to terms with the UFO enigma. If anything we have the antithesis of this - the Ufological Uncertainty Principle!

I cannot say with any more confidence that there will, or will not, be a UFO event in the A.C.T. within 24 years than within the next 24 hours. Thirty-seven years of UFO research hasn't changed that one jot! And if I could predict when the next A.C.T. UFO sighting will be, I would be at a loss to predict the type (daylight disc, CE3K, etc.). Even if I could do that, I'd be bluffing if I said I could tell you the behaviour of the UFO/ufonauts during the event. Uncertainty piled upon uncertainty.¹

This is not suggestive of a phenomenon that is inanimate and which blindly follows the natural cause and effect processes. What about an operation that is suggestive of a gene/instinctive level or box? Not much

improvement. One can draw a parallel with fishermen in quest of their prey. But UFOs "get away" with more regularity - let's face it, UFOs get away with something bordering on near certainty - than any fish in any fisherman's tale. At least fish are confined by area and by habitat. What's a UFO's habitat? Are they confined to that area of space we call Terra? We don't know, and it's a hard job to fish without that basic information.

That leaves intelligence.

Human beings, the ultimate cosmic pinnacle of intelligence (to the best of our knowledge) is the most unpredictable product that cosmic evolution has produced (to the best of our knowledge). And there is a real link between the two concepts - intelligence and predictability. One reason why machines/computers aren't considered intelligent is because they are too damn predictable and literal. True artificial intelligence will only come about when the results of their programming become uncertain; when they exhibit creative and intuitive abilities.

To overkill the relationship between intelligence and predictability, observe how this is mirrored when we consider the "hardness" or "softness" of our terrestrial academic disciplines. The Social Sciences (economics, psychology, history, etc.) which deal with and investigate aspects of human "intelligent" society are far "softer" sciences than the Biological Sciences - emphasis on dealing with and investigating things that operate at the gene level - which in turn are "softer" than the "hard" Physical Sciences (chemistry, physics, etc.) which deal with and investigate inanimate objects and (more or less) absolute processes with all the comfort and security of certainty they provide. As for the "Arts", they would be downright mushy, if not fluid!

There would be few who would argue the progress and validity of the Social Sciences. The human being is a tough nut to crack, but the cracks are there and getting wider. If the domain of the UFO problem were to lie with the Social Sciences (clearly it's not the Biological or Physical domains if this analysis of mine makes any sense at all) then again ufologists should have expected progress on the road to predicting through understanding the UFO. I'm not convinced this has been the case.

We do not understand the meaning and nature of the UFO any better today than we did following the flowering of the enigma in June 1947. Oh we have data and theories; we know what they usually and individually are not, but we still don't have the foggiest initial clue or degree of understanding about what they are and/or why they are, that goes 1/10th of 1% of the way down the road to predicting them even statistically, far less absolutely.

There are few ufologists, I suggest, who in all honesty would risk their ufological necks in any materialistic way by stating with any degree of confidence that the exact same state of affairs won't apply on the 24th of June in 2047!

If this is the case therefore, then we can state, with some degree of bravado, that the odds that UFOs are unpredictable to the degree that they exactly mirror human unpredictability, hence represent a human (mental, belief complex, imagery, etc.) phenomenon, are low. UFOs are orders of magnitude more unpredictable than 20th Century Homo sapiens and 20th Century terrestrial

evolutionary processes and results can account for.

That leaves the ultra- or extraterrestrial intelligence cause behind the UFO effect (where "ultra-" or "extra-" is used in the broadest context - nonterrestrial in space and in time, leaving viable options central to time travellers and parallel dimensions/universes). This nonterrestrial intelligence is the next logical evolutionary step up the cosmic ladder.

Much more than that I cannot say because, to date, the existence and nature of an ultra- or extraterrestrial intelligence is no better known or understood than that which it is trying to explain - the UFO. The former though - and this is my basic premise - must exhibit behaviour that will be as unpredictable to us, as our behaviour must seem to the animals, vegetables, and minerals of our neck of the cosmos - the Earth.²

There is one minor clue I'd like to discourse on briefly. Ufologists, when attempting to come to terms with the UFO, tear their hair out when forced to ponder the UFO's diversity. Any list of UFO/ufonaut size, colour, shape, behaviour, etc. is going to be a long one - too long to make a natural cause viable; too long to (apparently) make any nonterrestrial theory credible.

Yet, intelligence is unpredictable because intelligence exhibits an unparalleled degree of diversity in what it makes and in how it behaves. In the cosmic box called "inanimate objects" there are lots and lots of potential options which are compatible with the box of processes and which could, potentially, result in a universe with a kaleidoscope of diversity. Alas, the inanimate universe is not that complicated.

In that box which we label "UFO" there must be less options because the box is really only a sub-box of the broader box already identified as the universe. However, even though more tightly constrained, a large number of these options have been entertained. The greater the diversity, the more convinced we should be that there is an intelligence at work. It's all part of the equation that suggests that intelligence is proportional to unpredictability. The more of one, the more of the other. The message though is that I don't believe that the diversity displayed by the UFO can be used in argument to decide between a terrestrial intelligent cause, and an ultra- or extraterrestrial intelligent cause.

Any similarity between this analysis and ultimate reality may prove to be merely a matter of coincidence. But I doubt it. Further, there is no parallel with other pseudo-scientific phenomena (as debunkers collectively call that which is unknown and must remain unknown for personal peace of mind - some people just can't bear to have their apperception upset). In fact, I know of no other enigmatic phenomenon, natural, supernatural, Fortean, or whatever, that wasn't confined in some way by geography, by time, and/or by conditions. UFOs alone seemingly can appear anytime, anyplace, under any conditions to seemingly anybody! That's got to tell us something.

In conclusion, I believe that the characteristic of "predictability" (or "unpredictability") is as much a valid part of, and clue to, the nature of the UFO as is any other facet, such as colour, noise, or shape. The measurement and analysis of this trait will assist us in coming to terms with this phenomenon - of necessity a product of cosmic evolution and an integral part of the great cosmic scheme of things - which the Cosmos has thrown at us.

NOTES

- 1) I could of course average all of the past data and from that make a time, location, duration, type and behaviour prediction - but neither you nor I would have much confidence in it!
- 2) "...scientists expect UFOs to behave not like intelligent, let alone super-intelligent life, but rather like a natural phenomenon. A regular pattern would certainly point more to a natural phenomenon than to a superior life-form. Unpredictability is much more characteristic of intelligence than is regularity. The ability to evoke surprise is a characteristic we should expect of superior intelligence."
(Westrum, R.M. - "Human factors in UFO sightings" (in) - 1981 MUFON Symposium Proceedings - MUFON, Seguin, Texas - 1981 - p.68.)

Other commitments have prevented me from being active in UFO research during the past two years. This has given me time to think about the present state of research in Australia. ACUFOS, in line with all dynamic organisations, should benefit from debate about and periodic reassessment of its functions.

1. PURPOSE OF UFO RESEARCH

Presumably our basic purpose is to 'solve the UFO problem', or if resources are insufficient, to accumulate enough high-quality data to interest some better-funded scientific body. Also, our purpose is to maintain a high standard of objectivity and professionalism, so that ufology becomes properly part of mainstream science, thus making it a topic more likely to be studied by scientists.

However, the statement 'solve the UFO problem' is almost too simplistic. There is no single 'UFO problem': there is actually a host of smaller inter-related problems to be solved, most of them near the frontiers of current knowledge, in particular with regard to psychology. Also, the emotional content of ufology is high. One must constantly strive to minimise the influence of both the dogmatic believers and the dogmatic skeptics; and even among only objective researchers, one must constantly strive to maintain open communication and exchange of information, regardless of the inevitable personality clashes.

Keith Basterfield (1) states that the UFO problem will not be solved by scientists. His meaning is not clear. Does he mean that scientists refuse to look at the data because of a conservative inflexible attitude? I do not believe that is so. The main reason for the wariness of scientists is that so many of the arguments put forward by ufologists are pseudoscientific and emotional rather than scientific (see section 4.).

2. TYPE OF DATA AND METHOD OF APPROACH

Most investigators would agree that 90-95% of UFO reports received can readily be explained as misinterpretations of common natural and manmade objects (stars, balloons, planes, etc.). The amazing extent to which some witnesses distort their perceptions is in itself worthy of in-depth study, e.g. within the framework of the Percipient Study Group (Mark Moravec). Closer understanding would seem to lie within a study of altered states of consciousness (ASCs). The largest distortions of perception seem to be produced by witnesses who are the most readily suggestible, i.e. those who most readily lapse into an ASC or trance state when gazing at a bright light.

There are two approaches to the study of the remaining 5-10% of intractable cases. The first is to select several of the strangest ones and reinvestigate each in great depth (2). One of the following conclusions will result: (A) it becomes identifiable; (B) it remains unidentified because of insufficient data; or (C) it indicates some new phenomenon. (A) and (B) are the most likely conclusions for most of the cases. Ufologists are often tempted to use the term 'genuine UFO' for (C). However, such a term should be avoided; UFO is just that - an object that remains unidentified at the time because of lack of data or lack of understanding of the data.

The second (and, I believe, the less useful) approach is to analyse trends within the total group of these intractable cases (e.g. via the ACUFOS computer file, should this become re-established). The problem with this approach is that the group contains substantial noise, quite possibly a predominance. Indeed I suggest that 50-75% of cases currently on the computer file are worthless from the point of view of UFO research because of their incompleteness. It is also highly probable that these cases as a group represent a variety of origins. Frank Gillespie (3) has confused the

issue by suggesting that many IFOs might in fact be UFOs. This concept is contrary to Occam's Razor ('the hypothesis with the fewest assumptions is to be preferred') and is thus not acceptable unless overwhelming evidence emerges in its favour.

3. UFOLOGY AND SCIENTIFIC COOPERATION

Ufology is in the unfortunate position of being conducted by a few professional scientists and other expert investigators, and a long tail of amateurs of greatly varying objectivity. Tight control on standards and training are needed to ensure a useful output. The ACUFOS Investigators Manual (currently being revised) is important here. Within Australia, ACUFOS has achieved a great deal by excluding the least objective persons, but there is no room for complacency. The most notable achievements of ACUFOS have been: (A) the collection of UFO reports into a central file and catalogs, and the setting up of study groups; (B) individual investigations, e.g. Bill Chalker's study of the RAAF files, and Keith Basterfield's book 'UFOs - the Image Hypothesis'; and (C) the holding of UFOCONs. In my view, UFOCONs should be principally involved with discussion of investigations, and in deciding policy issues.

There is as yet no international association for professional ufologists, equivalent in status to the Parapsychological Association, which is affiliated with the American Association for the Advancement of Science (AAAS). However, two international groups have recently been set up which incorporate ufology within their ambit: the Society for Scientific Exploration (4), and the Centre for Scientific Anomalies Research (5). ACUFOS should start effective cooperation with both of these groups.

ACUFOS (which originated as ACOS, an affiliate of CUFOS in 1974) was the first body in Australia in recent times to attempt an organised research program. Since then, three other groups have sprung up: the Australian Institute of Psychic Research (6), the W.A. Society for Psychical Research (7) - both concentrating on psychic phenomena - and the Australian Skeptics (8) - covering the whole anomalies field but from a more skeptical viewpoint. More active cooperation between these groups and ACUFOS is needed - indeed a memorandum of understanding could be drawn up. Few new scientific consultants have joined ACUFOS in recent years. These other groups are fertile ground for new recruits to ACUFOS.

4. UFOLOGY: SCIENCE OR PSEUDOSCIENCE?

Ufologists often state that their subject is a true science, or even a protoscience (the study of a potentially new phenomenon). Skeptics say that ufology is a pseudoscience or a pathological science. Both views, I believe, are partly true. The pseudoscientific aspects must be eliminated, otherwise ufology will not become scientifically respectable. The big problem, I believe, is that ufology is a highly emotional topic. Some persons are attracted to the study of UFOs to support their own fervently held beliefs about the existence of a 'higher intelligence' (i.e. UFO research for them is a substitute for the conventional religious belief in God). This fervent believer gives an impetus to UFO research, but his (or her) conclusions need to be examined with an unusually high degree of care, as he is prone to jump to conclusions supporting his own beliefs. How is this fervent believer recognised? He overstates his case; he ignores evidence to the contrary and refuses to modify his stand when proved wrong. He cites only ufological sources, instead of trying to integrate his findings into mainstream science. He considers only 'supernormal' explanations (e.g. ETH, psychic projection theories, etc.) without first evaluating normal ones. He is firmly convinced (and emotionally argues) that UFO research is the most important subject being studied

today. He is excessively preoccupied with the subject in proportion to his total life goals. No UFO research group can honestly claim to be free of at least some of these tendencies.

There has been much debate in the ACUFOS Journal recently between the proponents of the ETH and IT (internal intelligence) theories. Although interesting, this debate is not capable of resolution because it ignores a more probably theory: i.e. that the 5-10% of intractable UFO reports can be explained in similar terms to the other 95% of reports, provided enough data becomes available.

5. INFORMING THE PUBLIC ABOUT UFOS

An effective public education program is essential before ufology can become an established scientific discipline. ACUFOS itself has not emphasized such a campaign, being largely a research group (except for publicity about UFOCONS). What is missing, I believe, is that ACUFOS does not at present have a set of position papers or 'fact sheets' stating in precise form what we consider to be the facts about UFOs. Useful facts sheets would be: (1) Recommended reading; (2) Common objects often mistakenly reported as UFOs; (3) Categories of unexplained reports. The ideal size

for such a fact sheet would be a single A4 sheet (double sided). Within the AIPR and other groups I have found such fact sheets are an excellent means of public information and a quick way of answering questions.

Two other important education initiatives have been privately sponsored: UFORAN and the Publicity Board. As regards UFORAN, however, ACUFOS-affiliated groups are listed on the inside front cover without comment. On the facing page it states that UFORAN is independent of all UFO groups. In many eyes, however, UFORAN has become the de facto public interface of ACUFOS (the Reports Digest still being a slim document).

The concept of the Publicity Board was to write letters correcting false information about UFOs, particularly in the media. It achieved some success, but it is now inactive, at least partly because there was some disagreement about the nature of the letters to be written. Should such letters always be courteous; or should some be blunt and authoritative (for recalcitrant offenders)? The Australian Skeptics have also used letter writing to good effect. The Board should be re-established in some form, and its exact relationship to ACUFOS clarified.

NOTES

- (1) UFORAN, Sept-Oct 1983, 4(2), page 2.
- (2) M. Hough. Selecting the best Australian UFO cases. JACUFOS 2(2), 8-9 (1981).
- (3) JACUFOS 4(2), 1983 (editorial). JACUFOS 4(4), 1983, pages 6-7.
- (4) Society for Scientific Exploration. Interim Secretarial Office: Dr Henry Bauer, College of Arts and Sciences, Virginia Polytechnic Institute and State University, Blacksburg Va 24061.
- (5) Centre for Scientific Anomalies Research. Prof. Marcello Truzzi, Dept of Sociology, Eastern Michigan University, Ypsilanti Mi 48197.
- (6) Australian Institute of Psychic Research. P.O. Box 445, Lane Cove N.S.W. 2066.
- (7) Western Australian Society for Psychical Research. Dept of Human Communications (Prof. John Frodsham), Murdoch University, W.A. 6150.
- (8) Australian Skeptics. Mark Plummer (chairman). P.O. Box 1555P, G.P.O. Melbourne 3001.

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UFO RESEARCH IN AUSTRALIA - A RESPONSE

by Frank Gillespie

There are a number of points amongst Mike Hough's thoughts (ibid.) which should not be allowed to pass without comment. I do not intend to deal with all of them here; I will leave some for more directly concerned people to answer.

Mike recommends that UFO research should utilize a selection of several of the strangest cases, while the great mass of background data is ignored. The big danger in this is that the moment data is subjected to a selection process, it becomes statistically biased. No two ufologists can agree on the 'ten best' UFO cases, because each has his own built-in prejudices, which automatically bias his selection process. Each researcher is prone to choose those cases which, *prima facie*, support his own preconceptions. I personally regard my own unspectacular but inexplicable sighting as the 'best', because it was a unique first-hand experience.

In claiming that the mass of UFO data contains too much noise to be useful, Mike ignores the fact that there is a whole branch of mathematical science devoted to

the problem of sorting a little information from a lot of noise. Few people who have not been actively involved with statistical analysis realise the elegant power of such techniques. For example, it can be proved conclusively that 1000 cases with 99% noise, is a far better sample to work with than any 10 cases selected from that data. In actual practice, Mike's concept of 'noise' in UFO data is a misconception. Any reported object which is unidentified is a 'genuine' UFO, belonging to one of two possible classes: (A) insufficient data, or (B) insufficient understanding of the data. There can be a lot of class (B) hidden in the class (A) data, but not vice versa. Every UFO case is the result of some specific cause, and therefore none of them can be called 'noise'.

The invocation of Occam's Razor is always fraught with danger, because the invoker must make his own assumptions about which assumptions are necessary for the hypothesis under examination; and he does not necessarily choose the smallest set. A case can be made for my suggestion that

most IFOs might be UFOs (1) without any assumptions at all; simply by looking at the proportion of IFOs to UFOs in both 'close encounters', and more distant observations. Logical reasoning suggests that the more closely an object is observed, the more identifiable it becomes; but current UFO statistics indicate the exact opposite. In any case, with the one assumption 'that scientifically oriented ufologists are overzealous in assigning identifications' (supported by my own observations), every aspect of my suggestion falls into place. Occam's Razor is, I believe, very definitely on my side.

With regard to the subject matter of UFOCONS, it seems to me that 'investigations' need little or no discussion before they go straight 'into the literature'. On the other hand, 'theories' should be presented live, so that discussion can iron out any kinks, or eliminate any kinky theor-

ies altogether, before they become a matter of permanent record. This applies particularly to 'far out' speculation, which should never be prejudged as worthless.

It is generally acknowledged that UFO witness misconception is one example of internal intelligence at work, so that all-embracing misconception is, in fact, one of the many internal intelligence theories (IIT). This theory was not ignored in recent ACUFOS Journal debate as Mike claims, but it was dealt a very severe blow by John Prytz (2). Until somebody comes up with new ideas or evidence regarding the tremendous increase in 'witness misconception?' in the last 4 decades, that paper remains the definitive work on the subject.

If I did not know Mike Hough better, I would suspect that he is evolving into one of those 'dogmatic skeptics' that he warns us about!

NOTES

(1) ACUFOS Journal 4,2, 1983 (editorial) & 4,4, 1983, pp.6-7.

(2) ACUFOS Journal 4,1, 1983, pp.6-10, "Genesis of the Modern UFO Phenomena with Respect to the Nature & Origin of UFOs".

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LETTER TO THE EDITOR

Sir,

I'd like to congratulate and welcome Michael Hough back to the pages of the ACUFOS Journal. I believe his article "UFO Research in Australia - Some Thoughts" is only his second to grace these pages. I hope I see much more of his work in the issues to come.

I would like however to briefly comment on two of Michael's statements. Michael states that the "main reason for the wariness of scientists (to study UFOs) is that so many of the arguments put forward by ufologists are pseudo-scientific and emotional rather than scientific". I believe this is an over-simplification. In a recent paper (1), David W. Swift puts forth "four factors which may have prejudiced scientists against UFOs". These are: 1) "Because UFOs do not fit readily into any particular branch of science, they fall into the cracks between the disciplines, and therefore have no ready-made scientific constituency to encourage their study"; 2) "the sensational nature of many UFO reports generated intense public interest and made sober scientific appraisal difficult"; 3) "Government involvement with UFOs was motivated by national security rather than scientific curiosity. ...UFOs were treated simply as a public relations problem. ...In short, the government withheld information, distorted facts, and discouraged witnesses from reporting their UFO experiences. Consequently

scientists who might have taken a serious look at unidentified flying objects were unaware of the number and nature of the reports, and could only consider them, as did many members of the public, as hoaxes, hallucinations, or misidentifications";* and 4) "UFOs, in addition to being unidentified, seem undignified. ...UFOs seem ludicrous to many people. ...People do not enjoy being laughed at and scientists in particular have a stake in maintaining a reputation for clear thinking. ...few were willing to jeopardize their reputations - and perhaps their careers - by acknowledging interest in something as zany as 'flying saucers'". So, many factors, not just the pronouncements of certain ufologists, played a role, the effects of which are still being felt today.

Michael's second statement that I take some issue with is "the most notable achievements of ACUFOS have been: ...(B) individual investigations, e.g. Bill Chalker's study of the RAAF files, and Keith Basterfield's book 'UFOs - the Image Hypothesis'". These achievements, however laudable, are not ACUFOS achievements. They are individual achievements that also happen to bring credit on ACUFOS by association. I'd replace Michael's "(B)" with, for example, the ACUFOS document service and series, or, the recent establishment of the Resource Centre, as being more valid cases in point that exemplify the achievements of ACUFOS.

John Prytz

(1) Swift, D.W. - "Scientists' selection of new research topics: UFOs vs SETI" - J. of UFO Studies, v.3, 1983 - p.62-75.

* The recent decision by the RAAF to reduce its involvement with UFO investigation, because it is "time consuming (and) unproductive", will also do little to instil confidence in the scientific community that ufology is worthwhile Science.

SOME THOUGHTS ON UFOS

by Zbigniew Paprotny, Rybnik, POLAND

I've read with great interest your (J. Prytz's) & F. Gillespie's paper "An inductive proof..." (note: given at UFOCON 7). Though I am not into subject of UFO I try to keep my mind open for new ideas relating to it. After reading the paper I believe more than ever that EIT hypothesis is more convincing and tenable than IIT one. But here my skeptical alter ego says: EIT better explains UFO phenomena than IIT only if there are any phenomena really waiting for explanation. Of course, I believe that there is an inexplicable hard-core residue, usually referred to as "true" UFO. It would be strange, however, if we could find explanation for 100% of sightings. We must not believe that present state of knowledge permits to explain just everything observed. In this respect situation of the UFO problem is similar to the question of existence of magnetic monopoles or "massive" neutrinos. There were claims that both had been observed. But were they really? Maybe yes maybe no. Nobody as yet was able to definitely confirm these findings. The best we can do is to keep trying. The same applies to UFO. There always will be people firmly believing in UFO and, at the same time, people calling it nonsense. Before hard proof for EIT (or IIT) nature of UFO is found, individual's attitude is in my opinion defined by two factors: /1/ mental construction of person in question, and/or: /2/ individual's experience with UFOs. I think that first factor's importance is greatly underestimated. Can say this after many talks with local UFO enthusiasts. My English is too poor to strictly explain what I mean. The best example I can give to illustrate the point is a glass filled in half with wine: for optimist it is still half full while pessimist would say that already half empty. Another example: famous van der Pol's and Stoermer's LDE (note: long delayed echoes) observations. Nobody doubts they were real. Leaving aside natural explanations consider hypothesis of ETI origin. Lunan interpreted the signals as being emitted from the probe sent by ε Bootis folks. Less known are another interpretations proposed in my part of the world: that LDEs can be interpreted as series of mathematical calculations, geometrical figures, that were transmitted from α Leom's probe, or from a star in Auriga. All these post-Lunan interpretations can hardly be questioned. I've spent much of my free time to find a flaw in these conceptions. Found none. In this situation, when the same database can be interpreted in so many different ways (each giving a different result), how can we say that these interpretations are of any value? In my opinion all these speculations (Lunan's including) had been done without any substantiation. None of the authors checked for example what was the error of LDEs notations. In dusty volume of "Nature" we see a diagram showing delays in seconds vs. number of the signal. Some of the points can be said to represent, say, 11 sec delay, but for other points nobody can be sure: 14 secs, or 13 - maybe 15? Existing data base is therefore not sufficiently precise to permit building of far-going interpretations. As far as I understand current status of UFO the situation here is very similar. In fact it is worse:

there are too many unprepared fanatics of UFO, sometimes making the whole thing ridiculous. It's a pity therefore that serious papers, like yours, are so rare and so reluctantly accepted by equally serious periodicals.

You are right: plausibility should precede proof. I think that no open-minded person would question this statement. But you should be prepared that great part of these persons will still remain skeptic, even if UFOs existence would prove plausible. Here differences in mentalities begin to act. "Optimists" will start looking for proofs believing that UFOs existence = plausible (EIT?) hypothesis + proof(s), "pessimists" will sit aside, cold and not convinced, waiting for a single hard-proof, proving not the UFOs existence but plausibility of UFOs (EIT) existence. Of course, if we choose IIT explanations many proofs can probably be readily found (hallucinations, etc.). But this doesn't interest me nor probably you. We are interested in EIT explanations. Here my point is: why They don't contact us? If They don't want to make contact why we happen to see Their ships (?) at all? If these sightings are randomly distributed in space and time, and in any case defined by Their will (plans, decisions or whatever you want) why none of these happened to be fully documented in course of routine scientific observations? If... and so on. I am aware that terrestrial type of logic need not be the best tool for understanding Their behaviour. Is there however any other tool? That's just why I feel uneasy when meet people from the local clubs of UFO-fans. I just can not accept their premises for believing in EIT-UFOs. And here I refer to factor no. 2 mentioned above: individual's experience. Maybe some of those cold-minded "monsters" (like me) would become UFO-supporters provided they have personal experience with UFOs. Unfortunately, I had none.

Once again in brief: I believe that Unidentified Flying Objects (of unknown nature - therefore Unidentified) happen to be observed. I don't believe that enough data (and of sufficiently high research quality) have been gathered about UFO to await that professional scientists should immediately start investigating the problem. I would also venture to ask: why, after many years, thousands of sightings (some claimed to be well-documented), numerous groups of well-trained people involved into research worldwide, etc., etc., aren't we closer to solving the riddle? Pro-UFO people should feel free to carry on their research, others - feel free to remain skeptic unless there are obvious reasons for changing their views. What "obvious" means is just a question of individual's mentality.

Well, all above don't mean that am in contra-UFO camp. I am simply staying aside, trying to be informed about new ideas in the field. Your help is in this respect truly indispensable. Sincerely hope that you won't be disappointed reading these sketchy remarks. You asked me to comment on your paper and that's why I have written on UFO at all. As Rolling Stones used to sing: "don't let me be misunderstood".

(by) John Prytz

Compiler's Note: Over the recent past, I have been inundated with many hundreds of never before cited references to previously referenced subjects. Hence, to get back on top of things again, I'll only be doing "updates" for this, and the following issue. In addition, because of the vast number of references, I've had to go to photoreduction in order to fit as many in as possible. I feel this is better than delaying items any more than is absolutely necessary.

One special item, worthy of note, that I have been asked to mention. Because this subject does not yet fit into any of the established categories thus far referenced, I shall cite it first off in my "compiler's note". The item is the new journal of the Australian Institute of Psychic Research (AIPR). Information on this publication, the A.I.P.R. Bulletin, can be obtained by writing to P.O. Box 445, Lane Cove, N.S.W., 2066, Australia.

Sagan, Carl - About

- 1) "Cold, dark apocalypse" - Time (US ed), 14 Nov. 1983 - p.43.

Panspermia - Monograph

- 1) Hutchison, R. - Search for our Beginning: An Enquiry, Based on Meteorite Research, into the Origin of our Planet and of Life - Oxford University Press, N.Y. - 1983.

Panspermia - Journal Articles

- 1) Briggs, M.H. - "Meteorites and planetary organic matter" - Observatory, v.82, 1962 - p.216-218.
- 2) Horneck, G. - "Survival of microorganisms in space: a review" - Advances in Space Research, v.1, no.14, 1981 - p.39-48.
- 3) Hoyle, F. - "Comets: a matter of life and death" - Vistas in Astronomy, v.24, no.2, 1980 - p.123-139.
- 4) Hoyle, F. & Wickramasinghe, N.C. - "Bacteria in space?" - New Scientist, 19 Jan. 1984 - p.46.
- 5) Levy, R.L. et.al. - "Organic analysis of the Pueblito de Allende Meteorite" - Nature, v.227, 1970 - p.148-150.
- 6) Oro, J. et.al. - "Hydrocarbons in extraterrestrial samples" - JBIS, Jan. 1968 - p.83-98.
- 7) Shallis, M.J. - "In the eye of a storm" (Profile: Sir F. Hoyle) - New Scientist, 19 Jan. 1984 - p.42-43.
- 8) Yuen, G. et.al. - "Carbon isotope composition of low molecular weight hydrocarbons and monocarboxylic acids from Murchison Meteorite" - Nature, 19 Jan. 1984 - p.252-254.
- 9) Zuckerman, B. - "Space telescopes, interstellar probes and directed panspermia" - JBIS, Sept. 1981 - p.367-370.

Exobiology - Bibliographies

- 1) Paprotny, Z. & Lehmann, J. - "Interstellar travel and communication bibliography: 1982 update" - JBIS, July 1983 - p.311-329.
- 2) West, M.W. et.al. - "Chemical evolution and the origin of life: bibliography supplements" - Origins of Life, v.5, no.3/4, 1974 - p.507-527; v.6, no.1/2, 1975 - p.285-300; v.8, no.1, 1977 - p.59-66; v.9, no.1, 1978 - p.67-74.

Exobiology - Monograph

- 1) Smith, M.S. & Gatewood, G. - Life Beyond Earth - Coles, Toronto, Canada - 1978.

9.

Exobiology - Book Review

- 1) Schorn, R.A. - "'Are We Alone?' by R.T. Rood & J.S. Trefil: review" - Sky & Telescope, Oct. 1983 - p.315-316.

Exobiology - Book Extracts

- 1) Huang, S.S. - "Physics and life" (in) - Fujita, S. (Editor) - Ta-You Wu Festschrift: Science of Matter - Gordon & Breach, N.Y. - 1978 - p.253-272.
- 2) United Nations - "Exobiology" (in) - Chipman, R. (Editor) - World in Space: A Survey of Space Activities and Issues - Prentice-Hall, Englewood Cliffs, N.J. - 1982 - p.176-177, 328-329.

Exobiology - Journal Articles

- 1) Barnhart, P.E. - "ETI in the classroom" - Cosmic Search, Winter 1981 - p.16-18.
- 2) Coffey, E.J. - "Nature of living organisms" - JBIS, Nov. 1980 - p.396-401.
- 3) Driscoll, E. - "Astronomers focus on extraterrestrial life" - JBIS, Sept. 1978 - p.338.
- 4) Gribbin, J. - "Can life evolve in elliptical galaxies?" - Astronomy, May 1977 - p.18-24.
- 5) Helvey, T.C. - "Extraterrestrial life: some aspects of exobiology" - Science Education, v.49, no.2, 1965 - p.173-177.
- 6) Lago, D. - "Toward the cosmic brain" - Cosmic Search, Summer 1981 - p.6-7.
- 7) Manser, A.R. - "Alien sociology" - Advancement of Science, Aug. 1965 - p.204-207.
- 8) Martin, A.R. & Bond, A. - "Is mankind unique?" - Spaceflight, June 1983 - p.254-256. (Discussion: Nov. 1983 - p.419-421.)
- 9) Michaud, M.A.G. - "Final question: paradigms for intelligent life in the universe" - JBIS, March 1982 - p.131-134.
- 10) Molton, P.M. - "Discovery, care and feeding of intelligent aliens" - Spaceflight, June 1981 - p.176-180.
- 11) Papagiannis, M.D. - "Search for extraterrestrial life: a new commission of the International Astronomical Union" - JBIS, July 1983 - p.305-307.
- 12) Schwartzman, D.W. - "ETI: an alternative perspective" - Science & Nature, no.2, 1979 - p.37-38.
- 13) Sheaffer, R. - "Are we alone after all?" - Spaceflight, Nov./Dec. 1980 - p.334-337. (Discussion: Feb. 1981 - p.61; March 1981 - p.91; April 1981 - p.123; June 1981 - p.187-188; July 1981 - p.235.)
- 14) Shklovskii, I.S. - "Mind-endowed life in the universe: can it be unique?" - Social Sciences, v.9, 1978 - p.199-215.
- 15) Spall, N.J. - "Physical appearance of intelligent aliens" - JBIS, March 1979 - p.99-102. (Discussion: Nov. 1979 - p.437-438; Nov. 1980 - p.395.)
- 16) Stephenson, D.G. - "Classification of extraterrestrial cultures" - JBIS, Nov. 1981 - p.486-490.
- 17) Thiemann, W. - "Life and chirality beyond the Earth" - Origins of Life, v.6, no.4, 1975 - p.475-482.
- 18) Williams, W.T. - "Problems of alien biology" - Advancement of Science, Aug. 1965 - p.198-200.
- 19) Wolfe, J.H. - "They're not here because they're out there" - AstroSearch, Sept./Oct. 1983 - p.6-10.

Exobiology - Life in Extreme/Exotic Environments

- 1) Molton, P.M. - "Exotic life and exobiology" - JBIS, April 1978 - p. 156-160. (Discussion: June 1979 - p.239-240; Jan. 1980 - p.39-40.)
- 2) Pirie, N.W. - "Life's thermal history" - Nature, 1 Sept. 1983 - p.8.
- 3) Trent, J.D. et.al. (+) Baross, J.A. & Deming, J.W. - "Possible artefactual basis for apparent bacterial growth at 250°C" - Nature, 23 Feb. 1984 - p.737-740.

Exobiology - Historical Aspects

- 1) Kawaler, S. & Veverka, J. - "Habitable sun: one of William Herschel's stranger ideas" - Journal of the Royal Astronomical Society of Canada, v.75, no.1, 1981 - p.46-55.
- 2) Ronan, C.A. - "Herschel and extraterrestrial life" - Observatory, v.94, 1974 - p.19.

Life in the Solar System: General

- 1) Horowitz, N.H. - "Search for life in the solar system" - Accounts of Chemical Research, v.9, no.1, 1976 - p.1-7.

Life in the Solar System: Venus

- 1) Kovach, T.R. - "Bacteria on Venus?" - Omni, Feb. 1984 - p.38.

Life in the Solar System: The Moon (with TLP)

- 1) Corliss, W.R. (Compiler) - "Puzzling Lunar surface features" (+) "Transient Lunar Phenomena (TLPs)" (in) - Mysterious Universe: A Handbook of Astronomical Anomalies - Sourcebook Project, Glen Arm, Maryland - 1979 - p.196-218; 219-242.
- 2) Oberg, J. - "Myths and mysteries of the moon" (in) - UFOs & Outer Space Mysteries - Donning, Norfolk, Virginia - 1982 - p.65-102.

Life in the Solar System: Earth

- 1) Sheffield, C. - Man on Earth: The Marks of Man: A Survey from Space - Sidgwick & Jackson, London - 1983.

Life in the Solar System: Mars (Post Viking)

- 1) Strand, L.J. - "Search for life on Mars: Shots in the dark" - Astronomy, Dec. 1983 - p.66-70.

Life in the Solar System: Jovian Planets/Satellites

- 1) Cassen, P.M. et.al. - "Is there liquid water on Europa?" - Geophysical Research Letters, v.6, 1979 - p.731-734.
- 2) Dagani, R. - "Ethane ocean may gird Saturn's largest moon" - Chemical & Engineering News, 16 Jan. 1984 - p.57.
- 3) Matteson, D.S. (+) Lunine, J.I. et.al. - "Acetylene on Titan" - Science, 16 March 1984 - p.1131.
- 4) Mood, S. - "Life on Europa?" - Astronomy, Dec. 1983 - p.16-22.
- 5) Reynolds, R.T. et.al. - "On the habitability of Europa" - Icarus, Nov. 1983 - p.246-254.

Extra-Solar Planetary Systems

- 1) Abt, H.A. - "Companions of sunlike stars" - Scientific American, April 1977 - p.96-104.
- 2) Bandermann, L.W. et.al. - "Satellites for the detection of non-solar planets" - Journal of Spacecraft & Rockets, v.18, no.2, 1981 - p.164-171.
- 3) "Barnard's Star updated" - Sky & Telescope, March 1979 - p.247.

Extra-Solar Planetary Systems (cont.)

- 4) Beatty, J.K. - "Prospecting for planets" - Technology Review, Jan. 1984 - p.59.
- 5) Black, D.C. - "On the detection of other planetary systems: detection of intrinsic thermal radiation" - Icarus, v.43, no.3, 1980 - p.293-301.
- 6) Black, D.C. & Scargle, J.D. - "On the detection of other planetary systems by astrometric techniques" - Astrophysical Journal, v.263, no.2, part 1, 1982 - p.854-869.
- 7) "Brilliant disc-shaped star may be forming planets" - Space World, Sept. 1977 - p.41-42.
- 8) Demianski, M. & Proszynski, M. - "Does PSR0329+54 have companions?" - Nature, 22 Nov. 1979 - p.383-385.
- 9) Dworak, T.Z. - "Star HD 3765: eclipsing binary or eclipsing planetary?" - Acta Astronomica, v.29, no.1, 1979 - p.151-155.
- 10) Eberhart, J. - "Solid material found around another star" - Science News, 24/31 Dec. 1983 - p.406.
- 11) Ewing, A. - "New planet discovered" - Science News Letter, 27 April 1963 - p.261.
- 12) Fawley, W.M. - "On the detection of jovian companions to white dwarfs" - Nature, 14 June 1979 - p.622.
- 13) Gatewood, G. et.al. - "On the astrometric detection of neighbouring planetary systems: II" - Icarus, v.41, no.2, 1980 - p.205-231. (Erratum: v.42 - p.285.)
- 14) Harvey, P.M. et.al. - "On the far-infrared excess of Vega" - Nature, 2 Feb. 1984 - p.441-442.
- 15) Hillen, E. - "Signal from another world" - Maclean's (Canadian), 22 Aug. 1983 - p.46.
- 16) Hughes, D.W. - "Nonsolar planets and their detection" - Nature, 28 June 1979 - p.759.
- 17) "Is the star MWC 349 forming a planetary system?" - Sky & Telescope, Nov. 1977 - p.363.
- 18) Jackson, A.A. & Killen, R. - "Accretion shocks as evidence of extrasolar planets" - JBIS, Nov. 1981 - p.494-497.
- 19) Lippincott, S.L. - "Astrometric search for unseen stellar and sub-stellar companions to nearby stars and the possibility of their detection" - Space Science Reviews, v.22, no.2, 1978 - p.153-189.
- 20) Matloff, G.L. - "Photometric color indices of extrasolar planets" - Icarus, v.15, 1971 - p.341-342.
- 21) McAlister, H.A. - "Speckle interferometry as a method for detecting nearby extrasolar planets" - Icarus, v.30, no.4, 1977 - p.789-792.
- 22) Mullaney, J. - "In the depths of space: an exciting cosmic hunt" - Science Digest, Feb. 1977 - p.41-43.
- 23) Mumford, G.S. - "Barnard's Star and its planetary system" - Sky & Telescope, June 1969 - p.360.
- 24) "New neighbor" - Newsweek (US ed), 29 April 1963 - p.58.
- 25) "Searching for nonsolar planets" - Sky & Telescope, Aug. 1979 - p.123-124.
- 26) "Second solar system?" - Astronomy, Nov. 1983 - p.60.
- 27) "Starspin and planets" - Astronomy, Feb. 1980 - p.60.

Extra-Solar Planetary Systems (cont.)

- 28) Thomsen, D.E. - "Seeking the planets of other stars" - Science News, 26 June 1982 - p.424-426.
- 29) van de Kamp, P. - "Barnard's Star 1916-1976: a sexagintennial report" - Vistas in Astronomy, v.20, no.4, 1977 - p.501-521.
- 30) van de Kamp, P. - "Barnard's Star: the search for other solar systems" - Natural History, April 1970 - p.38-43.
- 31) "What is orbiting the star Vega?" - AstroSearch, Sept./Oct. 1983 - p.3.

SETI - Book Extracts

- 1) Knapp, G.R. & Kuiper, T.B.H. - "Spectral-line sky surveys from the NASA-JPL SETI project" (in) - Burton, W.B. (Editor) - Large-Scale Characteristics of the Galaxy - D. Reidel, Dordrecht - 1979 - p.85-86.
- 2) United Nations - "Search for extraterrestrial intelligence (SETI)" (in) - Chipman, R. (Editor) - World in Space: A Survey of Space Activities and Issues - Prentice-Hall, Englewood Cliffs, N.J. - 1982 - p.178-185.

SETI - Journal Articles

- 1) Bainbridge, W.S. - "Attitudes toward interstellar communication: an empirical study" - JBIS, July 1983 - p.298-304.
- 2) Beatty, J.K. - "NASA's SETI: bigger is better" - Technology Review, Jan. 1984 - p.56-57.
- 3) Belitsky, B. - "Soviet SETI studies" - Spaceflight, Sept./Oct. 1980 - p.319-320.
- 4) Billingham, J. & Joels, K. - "Search for extraterrestrial intelligence" - Journal of Aerospace Education, no.11, 1976 - p.15-18.
- 5) Billingham, J. et.al. - "Observational program options and system requirements for the search for extraterrestrial intelligence (SETI)" - Life Sciences & Space Research, v.26, 1978 - p.17-32.
- 6) Bova, B. - "Who's there?" - Psychology Today, Oct. 1983 - p.52-58.
- 7) Clancy, P.F. - "Some advantages of wide over narrow band signals in the SETI" - JBIS, Nov. 1980 - p.391-395.
- 8) Coffey, E.J. - "Hominid evolution and SETI" - JBIS, March 1981 - p.107-114.
- 9) Coffey, E.J. - "Search for intelligence" - Spaceflight, Nov./Dec. 1980 - p.338-339. (Discussion: Feb. 1981 - p.61-62; May 1981 - p.156; July 1981 - p.236.)
- 10) "Extraterrestrial communication" - Spaceflight, July 1966 - p.256.
- 11) "Fifth international review meeting on communication with extraterrestrial intelligence (CETI)" - JBIS, March 1977 - p.119-120.
- 12) Gindilis, L.M. - "Extraterrestrial civilizations: problems of communication" - Social Sciences, no.4, 1972 - p.146-153.
- 13) Haviland, R.P. - "Interstellar communications" - QST, Aug. 1975 - p.50-52.
- 14) Hilton, W.F. - "CETI ellipsoid" - JBIS, Sept. 1981 - p.400-401.
- 15) Horowitz, P. - "Chasing the ultimate DX" - CQ: The Radio Amateur's Journal, Dec. 1978 - p.46-50.
- 16) Lineweaver, C. - "Communication with extraterrestrials" - JBIS, Nov. 1979 - p.436.
- 17) Lunan, D.A. - "SETI, the search for extraterrestrial intelligence" - Astronomy Quarterly, v.2, no.4, 1979 - p.146-149.

11.

SETI - Journal Articles (cont.)

- 18) Mallove, E.F. - "Renaissance in the search for galactic civilizations" - Technology Review, Jan. 1984 - p.48-54.
- 19) Martin, A.R. - "Interstellar travel and communication (2nd BIS conference, April 1977)" - Spaceflight, Sept. 1977 - p.313-314.
- 20) Mercer, D.M.A. - "Problems of communication with alien intelligent beings" - Advancement of Science, Aug. 1965 - p.200-203.
- 21) "Order of the Dolphin" - Spaceflight, July 1966 - p.243.
- 22) Perlman, B.A. & Sickels, R.M. - "Possible nature of extragalactic communications" - JBIS, Nov. 1979 - p.436-437.
- 23) Regis, E. - "UFO update:(amateur SETI)" - Omni, Dec. 1983 - p.153.
- 24) Schwartzman, D.W. - "Dialectics of the problem of CETI" - Science & Nature, no.2, 1979 - p.31-36.
- 25) "Seventh international review meeting on communication with extraterrestrial intelligence (CETI)" - JBIS, June 1979 - p.237-239.
- 26) Shore, S. - "SETI" - Physics Today, Jan. 1984 - p.S 13.
- 27) Siebrand, W.J. - "Radiospectroscopic study of astrophysical photon source flares and the SETI" - JBIS, March 1982 - p.135-141.
- 28) Stuiver, W. et.al. - "On the composition and deployment of a space-based interstellar search system" - JBIS, June 1981 - p.247-250.
- 29) Swift, D.W. - "Scientists' selection of new research topics: UFOs vs SETI" - Journal of UFO Studies, v.3, 1983 - p.62-75.
- 30) Tang, T.B. - "Recurrent supernovae as time markers in interstellar communications" - JBIS, Nov. 1981 - p.491-493.
- 31) "Ten years in search of ETI" - AstroSearch, Sept./Oct. 1983 - p.4-5.
- 32) Vakoch, D. - "Possible pictorial messages for communication with extraterrestrial intelligence" - Journal of the Minnesota Academy of Science, v.44, no.1, 1978 - p.23-25.
- 33) Wolkowicz, R. - "If the interstellar hot line rings, who gets the message?" - Smithsonian, Nov. 1983 - p.252.

Non-Radio SETI - Lasers, Masers, etc.

- 1) "Mars: a SETI lighthouse?" - Astronomy, Dec. 1983 - p.64.

Non-Radio SETI - Radar

- 1) Lunan, D.A. - "Are they there?" - New Scientist, 26 May 1977 - p.490.

Non-Radio SETI - Space Probes & Artifacts

- 1) Hilton, W.F. - "Automated intelligence for an interstellar probe" - Aerospace (British), v.5, no.10, 1978 - p.19-21.
- 2) Lunan, D.A. - "On the track of the hypothetical probe" - Astronautics & Aeronautics, Aug. 1973 - p.5.
- 3) Parkinson, B. - "Alien interstellar probes" - JBIS, Nov. 1978 - p.439.
- 4) Valdes, F. & Freitas, R.A. - "Comparison of reproducing and non-reproducing starprobe strategies for galactic exploration" - JBIS, Nov. 1980 - p.402-406.

Non-Radio SETI - Other

- 1) Lemke, H. - "Instantaneous communication over cosmic distances" - JBIS, June 1981 - p.255-256.

Cosmic Truths & Consequences - Monograph

- 1) Lilly, J.C. - Scientist: A Novel Autobiography - Lippincott, Philadelphia - 1978.

Cosmic Truths & Consequences - Journal Articles

- 1) Davies, P.C.W. - "How special is the universe?" - Nature, v.249, 1974 - p.208-209.
- 2) Dyson, F.J. - "Time without end: physics and biology in an open universe" - Reviews of Modern Physics, July 1979 - p.447-460.
- 3) Lavrakas, P.J. & Rosenbaum, D.P. - "Assessing belief in extraterrestrial life: the BEXTL Scale" - Journal of UFO Studies, v.1, 1979 - p.27-31.
- 4) Maddox, J. - "New twist for anthropic principle" - Nature, 2 Feb. 1984 - p.409.
- 5) Rosenbaum, D.P. et.al. - "Belief in extraterrestrial life: a challenge to Christian doctrine and fundamentalists?" - Journal of UFO Studies, v.2, 1980 - p.47-57.

Space Colonization - Monograph

- 1) Oberg, J. - Mission to Mars - Stackpole, Harrisburg, Penn. - 1982.

Space Colonization - Journal Articles

- 1) Conley, P. - "Interstellar flight and intelligence in the universe" - Spaceflight, Dec. 1972 - p.442-447.
- 2) de San, M.G. - "Ultimate destiny of an intelligent species - everlasting nomadic life in the galaxy" - JBIS, June 1981 - p.219-237.
- 3) Finkelstein, D. - "Relativistic limits to relativistic travel" - Journal of UFO Studies, v.3, 1983 - p.9-13.
- 4) Hardin, G. - "Interstellar migration and the population problem" - Journal of Heredity, March/April 1959 - p.68-70.
- 5) Mallcve, E.F. - "Starflight: the ultimate voyage" - Technology Review, Jan. 1984 - p.60-61.
- 6) Oberg, A. - "Spacehab: a city in orbit" - Omega, March/April 1984 - p.82-87, 126.
- 7) Richards, I.R. - "Closed ecosystem for space colonies" - JBIS, Sept. 1981 - p.392-399.
- 8) Singer, C.E. - "Galactic extraterrestrial intelligence: the constraint on search strategies imposed by the possibility of interstellar travel" - JBIS, March 1982 - p.99-115.
- 9) Smith, A.G. - "Constraints limiting the rate of human expansion into the galaxy" - JBIS, Sept. 1981 - p.363-366. (Discussion: March 1982 - p.142-144.)
- 10) Stephenson, D.G. - "Science and extraterrestrial colonies" - Spaceflight, Oct. 1979 - p.391-392.
- 11) Stoker, C. & McKay, C.P. - "Mission to Mars: the case for a settlement" - Technology Review, Nov./Dec. 1983 - p.27-30, 34-37.

UFOs - Monographs

- 1) Darbro, W.A. & Ingram, S.L. - Unidentified Flying Objects over the Tennessee Valley - Scott, Huntsville, Alabama - 1974.
- 2) de San, M.G. - Hypothesis on the Origin of UFO's - Editecs, Bologna, Italy - 1978.
- 3) Magor, J. - Aliens Above: A UFO Report - Hancock House, Blain, Washington - 1983.
- 4) Wilson, C. & Weldon, J. - Close Encounters: A Better Explanation - Creation-Life, San Diego, Calif. - 1978.

UFOs - Book Reviews

- 1) Friedman, S.T. - "'UFOs Explained' by P.J. Klass: review" - Astronomy, Jan. 1976 - p.45.

12.

UFOs - Book Reviews (cont.)

- 2) Page, T.L. - "'Scientific Study of Unidentified Flying Objects' by E.U. Condon et.al.: review" - American Journal of Physics, Oct. 1969 - p.1077-1072.
- 3) Sturrock, P.A. - "'UFOs: A Scientific Debate' by C. Sagan & T.L. Page (Editors): review" - Science, v.180, 1973 - p.593-595.

UFOs - Book Extracts

- 1) Corliss, W.R. (Compiler) - "Gelatinous meteors or Pwdre Ser" (+) "Prodigious falls of web-like material" (in) - Tornados, Dark Days, Anomalous Precipitation, and Related Weather Phenomena - Sourcebook Project, Glen Arm, Maryland - 1983 - p.56-59; 60-62.
- 2) Corliss, W.R. (Compiler) - "Meteor-like phenomena" (+) "Nocturnal lights" (in) - Handbook of Unusual Natural Phenomena - Sourcebook Project, Glen Arm, Maryland - 1977 - p.106-123; 130-146.
- 3) Knight, D. - "Vanishing satellites" (in) - Charles Fort: Prophet of the Unexplained - Victor Gollancz, London - 1971 - p.89-104.
- 4) Wilson, C. - "UFOs" (in) - Wilson, C. & Grant, J. (Editors) - Directory of Possibilities - Rutledge, N.Y. - 1981 - p.198-201.

UFOs - Journal Articles

- 1) McCabe, C. - "UFO update:(Stringfield's retrieval syndrome)" - Omni, Jan. 1984 - p.91.
- 2) Mishara, E. - "Airport for extraterrestrials" - Omni, Feb. 1984 - p.90.
- 3) Mitchell, L. - "UFO update:(Pajak's magnetic propulsion system)" - Omni, Feb. 1984 - p.87.
- 4) Moore, G. - "Those normal folk who sight UFO's" - Psychology Today, Sept. 1983 - p.78.
- 5) Morgan, C. & Hardy, D.A. - "UFO encounters:(Biblical UFOs)" - Space Voyager (formerly New Voyager), Dec. 1983/Jan. 1984 - p.58-61.
- 6) Persinger, M.A. - "Geophysical variables and behaviour: prediction of recent European UFO report years by nineteenth century luminosity and solar-seismic measure" - Perceptual & Motor Skills, v.56, 1983 - p.91-95.
- 7) Persinger, M.A. - "Geophysical variables and human behaviour: specific prediction of UFO reports within the New Madrid states by solar-geomagnetic and seismic measures" - Perceptual & Motor Skills, v.56, 1983 - p.243-249.
- 8) Persinger, M.A. & Derr, J.S. - "Relations among nocturnal lights, geomagnetic activity and earthquakes in Southern Washington" - Ecos, v.64, 1983 - p.762.
- 9) Rondinone, P. - "Alien of Aurora" - Omni, Dec. 1983 - p.154.

UFOs - Novelty Items

- 1) Gerrold, D. - "Implications in CE3K" - Starlog, Oct. 1978 - p.66-67; Dec. 1978 - p.30-31.

UFOs - Miscellaneous

- 1) "Mystery spirals in cereal fields" - Journal of Meteorology (British), v.8, 1983 - p.216.
- 2) Shilton, P. - "Min Min light" - Journal of Meteorology (British), v.8, 1983 - p.248.
- 3) Simon, C. - "Looking out for luminous phenomena" - Science News, 24/31 Dec. 1983 - p.412.

Earthquake Lights - Book Extract

- 1) Corliss, W.R. (Compiler) - "Earthquake lights" (in) - Lightning,

Earthquake Lights - Book Extract (cont.)

Auroras, Nocturnal Lights, and Related Luminous Phenomena - Sourcebook Project, Glen Arm, Maryland - 1982 - p.110-115.

Earthquake Lights - Journal Articles

- 1) Derr, J.S. - "Earthquake lights" - Earthquake Information Bulletin, May/June 1977 (or 1978, refs differ) - p.18-20.
- 2) Derr, J.S. - "Earthquake lights: a review of observations and recent theories" - Bulletin of the Seismological Society of America, v.63, 1973 - p.2177-2187.
- 3) "Earthquakes strike a light in the sky" - New Scientist, 24 June 1982 - p.846.
- 4) "Explanation for 'eerie' earthquake lights" - Science News, 5 June 1982 - p.375.
- 5) Kovach, T.R. - "Quake lights" - Omni, Sept. 1979 - p.37.

Ball Lightning

- 1) Charman, W.N. - "Ball lightning" - Physics Reports, Aug. 1979 - p.261-306.
- 2) Chattock, A.P. - "Globular lightning discharge" - Nature, v.109, 1922 - p.106.
- 3) "Great (Soviet) balls of fire" - New Scientist, 26 Jan. 1984 - p.9. (Discussion: 1 March 1984 - p.43.)
- 4) Matts, E. - "Fire ball?" - Weather, v.19, 1964 - p.228.

Tunguska, Siberian Explosion (1908) - Book Extracts

- 1) Corliss, W.R. (Compiler) - "Great Siberian meteor or Tunguska event" (in) - Handbook of Unusual Natural Phenomena - Sourcebook Project, Glen Arm, Maryland - 1977 - p.106-109.
- 2) Oberg, J. - "Tunguska echoes" (in) - Prazier, K. (Editor) - Paranormal Borderlands of Science - Prometheus, Buffalo, N.Y. - 1981 - p.420-427.
- 3) Oberg, J. - "Tunguska echoes" (in) - UFOs & Outer Space Mysteries - Donning, Norfolk, Virginia - 1982 - p.132-145.

Tunguska, Siberian Explosion (1908) - Journal Articles

- 1) Barash, M. - "Soviet science roundup:(Tunguska catastrophe)" - Science Digest, Jan./Feb. 1981 - p.46.
- 2) Baxter, J. & Atkins, T. - "Fire came by: the riddle of the great Siberian explosion" - Reader's Digest (US ed), Feb. 1978 - p.217-222+.
- 3) Berry, J.R. - "Way-out world of antimatter" - Popular Mechanics, Dec. 1965 - p.98-102+.
- 4) "Blast due to antimatter? Tunguska forest explosion" - Science News Letter, 12 June 1965 - p.382.
- 5) Bronshten, V.A. - "Tunguska Meteorite and bolides of the Prairie Network" - Solar System Research, v.10, 1976 - p.57-63.
- 6) Chaikin, A. - "Target: Tunguska" - Sky & Telescope, Jan. 1984 - p.18-21.
- 7) "Comet did it" - Scientific American, Jan. 1961 - p.80+.
- 8) "Comet, not meteorite, ruined Siberia forest" - Science News Letter, 14 Oct. 1961 - p.256.
- 9) Pesenkov, V.G. - "Nature of comets and the Tunguska phenomenon" - Solar System Research, v.3, 1969 - p.177-179.
- 10) Pesenkov, V.G. - "On the cometary nature of the Tunguska Meteorite" - Soviet Astronomy, v.5, 1962 - p.441-451.

13.

Tunguska, Siberian Explosion (1908) - Journal Articles (cont.)

- 11) Pesenkov, V.G. - "Study of the Tunguska Meteorite fall" - Soviet Astronomy, v.10, 1966 - p.195-213.
- 12) "Fireball over Siberia: 1908" - Time (US ed), 3 March 1980 - p.78.
- 13) Kloss, G. - "Great Siberian explosion" - Science Digest, Feb. 1960 - p.6-10.
- 14) Korobeinikov, V.P. et.al. - "Mathematical model and computation of the Tunguska Meteorite explosion" - Acta Astronautica, v.3, 1976 - p.615-622.
- 15) Kulik, L.A. - "Question of the meteorite of June 30, 1908 in Central Siberia" - Popular Astronomy, v.20, 1937 - p.559-560.
- 16) Liu, V.C. - "Test of the comet hypothesis of the Tunguska meteor fall" - Geophysical Research Letters, v.5, 1978 - p.309-312.
- 17) Marshall, L. - "Non-anti-matter nature of the Tunguska Meteor" - Nature, v.212, 1966 - p.1226.
- 18) McHugh, L.C. - "Tunguska mystery" - America, 11 Feb. 1961 - p.648-650.
- 19) "Message from 61 Cygni" - Time (US ed), 3 April 1964 - p.48+.
- 20) Panati, C. - "Mysterious blast" - Newsweek (US ed), 2 Aug. 1976 - p.59.
- 21) Park, C. - "Nitric oxide production by Tunguska Meteor" - Acta Astronautica, v.5, 1978 - p.523-542.
- 22) "Soviets propose new theories for Siberian explosion of 1908" - Science Digest, Nov. 1962 - p.35-38.
- 23) "Space ship that crashed" - Australian Flying Saucer Review, April 1960 - p.12-13.
- 24) "Star Wars II" - National Review, 10 Nov. 1978 - p.1398-1399.
- 25) "Tungus Meteorite may have been comet" - Science Digest, June 1961 - p.28.
- 26) Valentry, D. - "Blast no one can explain" - Mechanics Illustrated, March 1977 - p.94.
- 27) "What hit Siberia? Echoes of 1908" - Time (US ed), 11 June 1965 - p.98.

Artificial Intelligence - Monographs

- 1) Aleksander, I. & Burnett, P. - Reinventing Man: The Robot Becomes Reality - Kogan Page, London - 1983.
- 2) Bond, A.H. (Editor) - Machine Intelligence - Pergamon Infotech, Maidenhead, England - 1981.
- 3) Bundy, A. & Burstall, R. - Artificial Intelligence: An Introductory Course - Edinburgh University Press, Scotland - 1980.
- 4) Crosson, F.J. & Sayre, K.M. (Editors) - Modelling of Mind: Computers and Intelligence - University of Notre Dame Press, Notre Dame, Indiana - 1963.
- 5) Davis, R. & Lenat, D.B. (Editors) - Knowledge-Based Systems in Artificial Intelligence - McGraw-Hill, N.Y. - 1982.
- 6) Jackson, P.C. - Introduction to Artificial Intelligence - Petrocelli/Charter, N.Y. - 1975.
- 7) Michalski, R.S. et.al. (Editors) - Machine Learning: An Artificial Intelligence Approach - William Kaufmann, Los Altos, Calif. - 1983.
- 8) Raphael, B. - Thinking Computer: Mind Inside Matter - W.H. Freeman, San Francisco, Calif. - 1976.

Artificial Intelligence - Monographs (cont.)

- 9) Rich, E. - Artificial Intelligence - McGraw-Hill, N.Y. - 1983.
- 10) Simons, G.L. - Are Computers Alive? Evolution and New Life Forms - Harvester, England - 1983.
- 11) Simons, G.L. - Towards Fifth-Generation Computers - National Computing Centre, Manchester, England - 1983.
- 12) von Neumann, J. - Computer and the Brain - Yale University Press, New Haven, Connecticut - 1958.
- 13) Winston, P.H. - Artificial Intelligence - Addison-Wesley, Reading, Mass. - 1977.

Artificial Intelligence - Book Extracts

- 1) Doty, K.L. - "Intelligent machines" (in) - McGraw-Hill Yearbook of Science and Technology: 1984 - McGraw-Hill, N.Y. - 1983 - p.10-23.
- 2) Fink, D.G. - "Artificial intelligence" (in) - McGraw-Hill Yearbook of Science and Technology: 1964 - McGraw-Hill, N.Y. - 1963 - p.63-72.
- 3) Ramo, S. - "Man and intelligent machines" (in) - McGraw-Hill Yearbook of Science and Technology: 1963 - McGraw-Hill, N.Y. - 1962 - p.53-64.

Artificial Intelligence - Journal Articles

- 1) Amosov, N.M. - "Modelling the human mind" - Impact of Science on Society, Jan. 1978 - p.75-85.
- 2) Bernstein, A. & Rubin, H. - "Artificial evolution of problem-solvers" - American Behavioral Scientist, May 1965 - p.19-23.
- 3) Boden, M.A. - "Impact of artificial intelligence" - Futures, Feb. 1984 - p.60-70.
- 4) Boden, M.A. - "Sorting out the tigers from the zebras" - New Scientist, 16 Feb. 1984 - p.11-12.
- 5) Calder, N. - "Brains versus computers: how much decision-making can we leave to the machine" - New Statesman, 17 May 1968 - p.645-648.
- 6) Coffey, E.J. - "Computers and intelligence" - JBIS, July 1980 - p.271-278. (Discussion: Sept. 1981 - p.402-406; Nov. 1981 - p.502-504.)
- 7) Dreyfus, H.L. - "Critique of artificial reason" - Thought, Winter 1968 - p.507-522.
- 8) Dreyfus, H.L. - "Why computers must have bodies in order to be intelligent" - Review of Metaphysics, Sept. 1967 - p.13-32.
- 9) Feigenbaum, E.A. - "Artificial intelligence" - IEEE Spectrum, Nov. 1983 - p.77-78.
- 10) Hilts, P.J. - "Dean of artificial intelligence" - Psychology Today, Jan. 1983 - p.28-31+.
- 11) Houston, D. - "Artificial intelligence: before the first generation" - Starlog, Dec. 1979 - p.72.
- 12) Houston, D. - "Artificial intelligence: the Colossus trilogy" - Starlog, Feb. 1980 - p.64-65.
- 13) Houston, D. - "Artificial intelligence: the rulers of the world" - Starlog, Jan. 1980 - p.64.
- 14) Jastrow, R. - "Our brain's successor" - Science Digest, March 1981 - p.58-62.
- 15) Jefferson, G. - "Mind of mechanical man" - British Medical Journal, v.1, 1949 - p.1105-1121.

14.

Artificial Intelligence - Journal Articles (cont.)

- 16) Jencks, S.F. - "Machines that can think" - Harvard Review, Spring 1965 - p.36-45.
- 17) Kantor, J.R. - "Man and machines in psychology: cybernetics and artificial intelligence" - Psychological Record, Fall 1978 - p.575-583.
- 18) Michie, D. - "Machine and the theory of intelligence" - Nature, 23 Feb. 1973.
- 19) Minsky, M. - "Why people think computers can't" - Technology Review, Nov./Dec. 1983 - p.64-70, 80-81.
- 20) Robinson, G. - "How to tell your friends from machines" - Mind: A Quarterly Review of Psychology & Philosophy, Oct. 1972 - p.504-518.
- 21) Sayre, K.M. - "Intelligence, bodies, and digital computers" - Review of Metaphysics, June 1968 - p.714-723.
- 22) Shurkin, J.N. - "Expert systems: the practical face of artificial intelligence" - Technology Review, Nov./Dec. 1983 - p.72-78.
- 23) Smith, J.M. - "Matchsticks, brains and curtain rings" - New Scientist, 16 Feb. 1984 - p.9-10.
- 24) Solomon, S. - "Superbrain: the race to create the world's fastest computer" - Science Digest, Sept. 1983 - p.42-49+.
- 25) Turing, A.M. - "Computing machinery and intelligence" - Mind: A Quarterly Review of Psychology & Philosophy, Oct. 1950 - p.236.
- 26) Waldrop, M.M. - "Artificial intelligence: into the world" - Science, 24 Feb. 1984 - p.802-805.
- 27) Waldrop, M.M. - "Necessity of knowledge" (+) "Artificial experts" - Science, 23 March 1984 - p.1279-1282.
- 28) "Who will build...supercomputer?" - Reader's Digest (US ed), Oct. 1983 - p.189-191+.
- 29) Zimmerman, H. - "Artificial intelligence: robots, androids and cyborgs" - Starlog, March 1980 - p.64.

Astro-Archaeology - Monograph

- 1) Urton, G. - At the Crossroads of the Earth and the Sky - University of Texas Press, Austin, Texas - 1981.

Astro-Archaeology - Journal Articles

- 1) Gingerich, O. - "Archaeoastronomers convene in Oxford" - Sky & Telescope, Jan. 1982 - p.7-10.
- 2) Stephenson, R. - "Skies of Babylon" - New Scientist, 19 Aug. 1982 - p.478-481.
- 3) "Telling time with Venus" - Omega, Sept./Oct. 1982 - p.28.

Monsters - Journal Articles

- 1) Begley, S. - "In search of mythic beasts" - Newsweek (US ed), 11 April 1983 - p.74.
- 2) "Cryptozoology group forming" - BioScience, Dec. 1981 - p.804.
- 3) May, R.M. - "Cryptozoology" - Nature, 23 Feb. 1984 - p.687.
- 4) Ohlendorf, P. - "Hunt for cryptic beasts" - Maclean's (Canadian), 22 Feb. 1982 - p.48, 51.
- 5) Steinhart, P. - "Hidden animals" - Audubon, Jan. 1983 - p.10+.
- 6) Wilkinson, S. - "Monsters around the world" - Cosmopolitan, Jan. 1960 - p.56-59.